

We claim:

1 1. An article comprising a tunable filter, the tunable filter comprising:
2 an optical cavity having a length that is determinative of a center transmission
3 wavelength of a passband of said tunable filter;
4 a tuning device operative to change said length of said optical cavity; and
5 a filter-disabling means operative to disrupt a finesse of said optical cavity.

1 2. The article of claim 1 further comprising:
2 a first filter input for receiving a multiplexed optical signal having a plurality of spectral
3 channels and delivering it to said optical cavity;
4 a first filter output for receiving at least one of said spectral channels from said optical
5 cavity, wherein said received spectral channel is within said passband of said
6 tunable filter.

1 3. The article of claim 2, further comprising:
2 a first waveguide in optical communication with said first filter input; and
3 a second waveguide in optical communication with said first filter output.

1 4. The article of claim 3 further comprising:
2 a plurality of transmitters for generating a plurality of optical signals;
3 a multiplexer for multiplexing said optical signals into said multiplexed optical signal,
4 said optical signals defining said spectral channels thereof;
5 a node comprising said tunable filter and a subscriber terminal, wherein said subscriber
6 terminal is in optical communication with said second waveguide and is
7 operable to receive said spectral channel therefrom; and
8 an optical fiber for transmitting said multiplexed optical signal to said node, wherein said
9 first waveguide is in optical communication with said optical fiber via said
10 node.

1 5. The article of claim 1 wherein said optical cavity is defined by first and second
2 spaced mirrors.

1 6. The article of claim 5 wherein said first mirror is movable, and further wherein
2 said tuning device comprises said first mirror.

1 7. The article of claim 6 wherein said filter-disabling device comprises said first
2 mirror.

1 8. The article of claim 7 wherein said first mirror is operative to tilt.

1 9. The article of claim 8 wherein said first mirror comprises:
2 a layer suspended over a substrate;
3 a dielectric mirror disposed on said layer; and
4 two individually-addressable electrically-conductive electrodes.

1 10. The article of claim 7 wherein said first mirror is bifurcated into an upper layer
2 and a lower layer, wherein:
3 said upper layer and said lower layer are spaced from one another defining an
4 auxiliary gap; and
5 said upper layer and said lower layer are movable.

1 11. The article of claim 10 wherein:
2 said upper layer and said lower layer each comprise at least one layer of material; and
3 said one layer of material has a thickness that is an odd-multiple of an eighth of
4 an operating wavelength of said tunable filter.

1 12. The article of claim 6 wherein said filter-disabling device comprises electrically-
2 switched media selected from the group consisting of absorbing media, scattering media
3 and depolarizing media.

1 13. The article of claim 12, wherein said electrically-switched absorbing media is a
2 quantum well modulator.

1 14. The article of claim 1 wherein:
2 said optical cavity comprises a ring resonator;
3 said tuning device comprises an adjustable delay device operative to change a length of
4 said optical cavity; and
5 said filter-disabling device is an adjustable loss device characterized by a
6 transmissibility that varies with applied current.

1 15. The article of claim 14 wherein:
2 said filter-disabling device comprises a semiconductor optical amplifier that is disposed
3 in said ring resonator.

1 16. A method comprising:
2 disrupting finesse of a tunable filter;
3 tuning said tunable filter to a desired center transmission wavelength; and
4 recovering said finesse of said tunable filter.

1 17. The method of claim 16 wherein said filter has two spaced mirrors in parallel
2 relation to one another, said two mirrors defining an optical cavity, wherein:
3 the step of tuning comprises changing a length of said optical cavity.

1 18. The method of claim 17 wherein said step of tuning further comprises moving at
2 least one of said two mirrors to change said length of said optical cavity.

1 19. The method of claim 17 wherein the step of disrupting finesse comprises tilting
2 one of said two mirrors so that said two mirrors are not in parallel relation to one another.

1 20. The method of claim 17 wherein:
2 one of said mirrors is bifurcated so that a gap is defined within the bifurcated mirror;
3 when said filter is not being tuned, said gap has a first size that provides a first finesse
4 suitable for transmitting said center transmission wavelength through said
5 tunable filter;
6 the step of disrupting finesse comprises changing said first size of said gap to provide a
7 second finesse that is unsuitable for transmitting said center transmission
8 wavelength through said tunable filter.

1 21. The method of claim 17 wherein:
2 an electrically-switched media selected from the group consisting of absorbing media,
3 scattering media and depolarizing media is disposed in said optical cavity;
4 when said filter is not being tuned, said electrically-switched media is transmissible at
5 operating wavelengths of said filter;
6 said step of disrupting finesse comprises electrically switching said electrically-
7 switched media so that it is non-transmissible at said operating
8 wavelengths of said filter.

1 22. The method of claim 16 wherein:
2 said filter comprises a ring resonator having an in-line semiconductor optical amplifier;
3 when said filter is not being tuned, said semiconductor optical amplifier is transmissible
4 at operating wavelengths of said filter;
5 said step of tuning comprises changing an effective length of said ring resonator; and
6 said step of disrupting finesse comprises changing operation of said semiconductor
7 optical amplifier so that it is non-transmissible at operating wavelengths of said
8 filter.